FEDERAL DEFENDANTS' DECLARATION OF BRUCE P. STRAUSS

ATTACHMENT 4

Wagner v. U.S. Dep't of Energy

Civil No. 08-00136-HG-KSC (D. Haw.)

INTERNATIONAL CO-OPERATION AGREEMENT

between

THE EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH (CERN)

and

THE DEPARTMENT OF ENERGY OF THE UNITED STATES OF AMERICA

and

THE NATIONAL SCIENCE FOUNDATION OF THE UNITED STATES OF AMERICA

concerning

SCIENTIFIC AND TECHNICAL CO-OPERATION ON LARGE HADRON COLLIDER ACTIVITIES

1997

The European Organization for Nuclear Research, hereinafter referred to as "CERN", represented by the President of Council, and the Director-General,

on the one hand,

and

the United States Department of Energy (DOE) and the United States National Science Foundation (NSF),

on the other hand,

CONSIDERING

that on 16 December 1994, the CERN Council approved the Large Hadron Collider (LHC) Project as described in Annex I, and also provided for the possibility for non-Member States to participate in it (CERN/2075);

that CERN has confirmed the overriding priority and the vital importance of the LHC for the long-term future of the laboratory;

that international collaboration provides an effective way for the optimal utilization of resources for and by CERN, DOE and NSF;

that progress in high-energy physics contributes to advances in other sciences and the results of high-energy physics research are available to all fields of science;

that, in common with the major particle physics laboratories in the United States and in other regions, CERN follows the open access policy specified in the "International Committee for Future Accelerator Guidelines on the Interregional Utilization of High Energy Physics Accelerator Facilities" adopted in 1980;

that future large accelerators and other scientific facilities are expected to be constructed, operated and supported multinationally and may be located in any participating nation;

that the U.S. contribution to the construction of the LHC represents an important step forward in international scientific collaboration, and in the expectation that the U.S. example in high energy physics accelerator construction will be followed by inter-regional contributions to future important scientific construction projects of mutual interest to the U.S. and CERN Member States;

DESIRING TO

advance the understanding of the nature of matter and energy through the LHC Experiments;

maintain the research momentum in the field of high-energy physics established over the past decades;

HAVING REGARD TO

the substantial scientific progress that has been made over the past decades through physics research facilities in Europe and the United States;

the long history and close relationship existing between the European and U.S. High-Energy Physics communities and their wish to promote and strengthen the spirit of inter-regional and global co-operation in this field;

the strong interest expressed by U.S. physicists in the LHC project and in the construction of some parts of this project, as well as the large number of U.S. institutions engaged in the experiments to be performed at the LHC accelerator; the mutual benefit which CERN, DOE and NSF will derive from U.S. participation in this unique project, and in particular from shortening the duration of the LHC accelerator construction to which U.S. participation will contribute;

the fact that experiments with the LHC accelerator will be performed by international collaborations acting on the basis of Memoranda of Understanding;

ALSO CONSIDERING

that CERN is an Intergovernmental Organization established by the Convention signed in Paris on 1 July 1953, revised on 17 January 1971;

that accordingly, the Organization enjoys international status in its Host State Switzerland, in accordance with the Agreement signed on 11 June 1955 by CERN and the Swiss Confederation, as well as in its Host State France, in accordance with the Agreement signed on 13 September 1965 by CERN and the French Republic, and revised on 16 June 1972;

HAVE AGREED AS FOLLOWS:

Article I
Definitions

The following definitions pertain to this Agreement.

1.1 Parties to the Agreement. CERN on the one side; DOE and NSF, the U.S. funding agencies, on the other side, together "the U.S. Party".

1.2 The LHC accelerator. A collider with two counter-rotating proton beams, each with an energy of up to 7 trillion electron volts, which collide at four intersection points and is fed by an existing chain of proton synchrotrons.

1.3 The LHC experiments. The two large experiments ATLAS (A Toroidal LHC ApparatuS) and CMS (Compact Muon Solenoid) that are being built by the ATLAS and CMS international Collaborations.

1.4 Collaborations. International groups responsible for building each detector. They include CERN personnel, teams from institutions in CERN Member States and other non-Member States as well as contractors and grantees of DOE and NSF.

1.5 The LHC project. The activities by CERN to build the LHC accelerator and to contribute to the construction of, and to provide co-ordination and support for, the LHC experiments.

1.6 LHC activities. The LHC project, the exploitation of the LHC accelerator, the LHC experiments and supporting research and development, and other LHC-related activities.

1.7 LHC Board. A co-ordinating body to be established by the Director-General of CERN, which will bring together representatives of organizations outside CERN that are involved in the construction of the LHC accelerator, and CERN staff, in order to exchange information and monitor work progress.

1.8 The CERN Council. The governing body of CERN made up of representatives of all Member States.

1.9 Observer in Council. A special non-voting status for States which are not members of CERN, which is unilaterally granted by CERN's Council to an individual State, allowing its accredited representatives to attend open Council sessions.

1.10 Committee of Council. A subsidiary consultative body of the CERN Council which, in collaboration with the Management of the Laboratory, prepares the meetings and decisions of the Council and monitors the policies of CERN.

1.11 U.S. participants. DOE and NSF, and their contractors and grantees participating in activities under this Agreement.

1.12 CERN personnel. As defined in CERN's Staff Rules and Regulations.

1.13 Memoranda of Understanding (MOU). Agreements or arrangements between institutions participating in the LHC experiments and CERN, describing the responsibilities of all participants in these experiments. (The primary responsibilities and funding obligations of DOE and NSF are set forth in this Agreement and in Protocols to this Agreement.)

1.14 Implementing Arrangements. Agreements or arrangements between CERN and U.S. institutions participating in the LHC accelerator, setting forth the responsibilities of the participants.

Article II
Purpose

The purpose of this Agreement is to provide the Parties with a framework for scientific and technical co-operation relating to LHC activities, to help bring the LHC accelerator and the LHC experiments (detectors) into being as early as possible, and to utilize them in advancing the understanding of matter at the high energy frontier.

Article III
Scope of the Co-operation

The co-operation shall include the following fields of activity:

3.1 construction and commissioning of the LHC accelerator; and

3.2 construction and participation in the LHC ATLAS and CMS experiments.

Article IV
Forms of Co-operation

4.1 The co-operation shall take the following forms:
- a) research and development related to accelerators and detectors;
- b) procurement of specialized materials, equipment or software;
- c) design and fabrication of equipment and components for use in the LHC activities;
- d) visits by scientists, engineers and other experts to participate in assembly and commissioning activities, and to conduct research and development;
- e) exchange of scientific and technical information, and personnel;
- f) seminars and other meetings; and
- g) exchanges and loans of equipment, instruments and materials.

4.2 The co-operation shall extend to such other forms as mutually agreed.

Article V
Implementation

Co-operation under this Agreement shall be implemented pursuant to this Agreement and two Protocols which shall form an integral part of this Agreement. The Protocols to be concluded are the following:

5.1 An Accelerator Protocol concerning the participation of DOE and its contractors in the construction of the LHC accelerator, which will be signed by CERN and DOE.

5.2 An Experiments Protocol concerning the involvement of U.S. participants in the LHC experiments, which will be signed by CERN on one side and by DOE and NSF on the other side.

Article VI
Involvement of U.S. Participants

Under conditions to be defined in the Protocols referred to in Article V above, the U.S. participants shall enjoy the following rights in connection with their involvement in the LHC project:

6.1 CERN shall supply U.S. participants with the information necessary to allow and facilitate their involvement in the co-operation.

6.2 U.S. scientific institutions shall have the right to participate in the LHC experiments, at the level reflected in the Experiments Protocol and in the Memoranda of Understanding that cover or will cover the ATLAS and CMS Collaborations, under conditions described in the CERN document "General Conditions for Experiments Performed at CERN", dated 25 April 1989, and such other documents, in effect at the time of

the conclusion of this Agreement, that pertain to CERN's relationship to the ATLAS and CMS Collaborations.

Article VII
Involvement of U.S. Party

7.1 The United States, represented by the U.S. Party, shall become an Observer at the CERN Council. As an Observer to the Council, the U.S. Party will receive the same information as Delegates to the CERN Council concerning progress of the LHC project, including regular reports from the Science Policy Committee, and reports from the Director General based on recommendations from the Machine Advisory Committee and the LHC Committee. This will allow the U.S. Party to closely monitor the progress of the LHC activities and participate in all major decisions which will impact the U.S. contributions.

7.2 The U.S. Party shall also be invited to discuss with the CERN Committee of Council once a year and whenever major LHC policy issues are under discussion.

7.3 Should any condition arise which calls into question the attainment of the design specifications of the LHC as listed in Annex I, CERN will promptly notify the U.S. Party and will invite the U.S. Party to discuss the situation with the CERN Committee of Council at the earliest opportunity. A meeting of the U.S.-CERN Co-operation Committee, which will be established in accordance with Article XV, will also be called to discuss the situation if requested by either Party.

7.4 The U.S. Party shall be a full member of the ATLAS and CMS Resource Review Boards.

7.5 DOE shall be invited to appoint a member of the LHC Board when that body is created.

Article VIII
U.S. Financial Participation

Subject to the availability of appropriated funds, the financial contributions of the U.S. Party to the LHC activities over a period of approximately ten years will consist of:

8.1 goods and services in an amount budgeted at and not to exceed $200 million (which includes contingency) from DOE for the LHC accelerator construction as described in the Accelerator Protocol, it being understood that any increase in funding requirements for the LHC accelerator shall be the responsibility of CERN; and

8.2 goods and services budgeted at and not to exceed $250 million (which includes contingency) from DOE, and goods and services budgeted at and not to exceed the National Science Board authorized amount of $81 million (which includes contingency) from NSF, for the LHC experiments as described in the Experiments Protocol.

Article IX
Personnel

9.1 CERN and the U.S. participants shall each be responsible for their own personnel, in particular as far as salaries, allowances, social insurance coverage and travel costs are concerned.

9.2 CERN, on the territory of its Host States, and the U.S. participants, on the territory of the United States, shall assist each other in dealing with personnel issues as appropriate when necessary for the implementation of this Agreement.

9.3 The Parties shall use their best efforts to ensure that their personnel, including personnel of the U.S. participants, when working under this Agreement, shall conform to the rules for conduct and safety in force in the institution where the work is performed, and shall be placed under the institution's authority in this respect.

Article X
Equipment

10.1 The U.S. participants shall remain the owners of the equipment which they supply under the Agreement and the Protocols thereto, unless the ownership thereof has been transferred to CERN.

10.2 The U.S. Party shall use its best efforts to ensure that all equipment which the U.S. participants agree to supply shall conform to the safety standards in force at CERN at the time of delivery to CERN.

10.3 The LHC accelerator materials and equipment, supplied to CERN under the Agreement, shall remain at CERN's disposal until the full completion of all experiments at the LHC, unless otherwise agreed by the Parties.

10.4 The delivery of LHC accelerator materials and equipment to CERN shall be carried out in accordance with a procedure to be agreed between the Parties. After the completion and commissioning of the LHC accelerator, CERN shall be responsible for its operation and maintenance.

10.5 Operations and maintenance responsibilities for the equipment and components delivered for the detectors will be defined in MOUs.

Article XI
Principle of Free Circulation

Each Party shall use its best efforts to facilitate, in accordance with applicable laws and regulations, the movement of persons, the importation and exportation of materials, equipment and other goods and the transfer of currencies which may be necessary for the implementation of this Agreement.

Article XII
Liability for Damages

In the event that damages are incurred in the course of, or arising out of, the execution of this Agreement and its Protocols, the Parties shall consult on appropriate methods of settlement.

Article XIII
Intellectual Property

The Parties shall notify each other, in a timely fashion, of any inventions or copyright works resulting from this Agreement. Rights to such intellectual property shall be granted in accordance with the following guidelines.

13.1 For intellectual property created during research activities designated by the Parties as joint research, DOE and NSF shall be entitled to obtain all rights and interests in the territory of the United States and CERN shall be entitled to obtain rights and interests in the territories of the CERN Member States. Rights and interests in other countries will be determined by mutual agreement. In determining rights and interests in other countries, the Parties shall consider the relative contributions of the Parties, the benefits of exclusive or non-exclusive licensing by territory or for field of use, requirements imposed by the Parties' domestic laws and other factors deemed appropriate. A Party wishing to take out patents or otherwise protect inventions, developments, expertise or software resulting from the joint research, shall first consult with the other Party in order to agree on the legislation applying to the use and exploitation of such intellectual property.

13.2 If research is not specifically designated as joint research, rights to intellectual property arising from the research will be granted in accordance with the policies of the institute conducting the research.

13.3 Each Party shall assure that the other Party is granted a non-exclusive, irrevocable, royalty-free license for the use of such intellectual property arising under this Agreement.

Article XIV
Fiscal and Customs Exemptions

Each Party shall make its best efforts to exempt or limit from taxation and customs duties the equipment referred to in Article X above.

Article XV
Co-operation Committee

15.1 In order to monitor and facilitate the activities undertaken within the framework of this Agreement, a U.S.-CERN Co-operation Committee, hereinafter referred to as "the Committee", shall be established.

15.2 The Committee shall consist of representatives appointed by each Party. Two co-chairmen shall also be selected, one by CERN and one by the U.S. Party.

15. 3 The Co-operation Committee shall meet annually, or more frequently as deemed appropriate, and shall monitor the LHC activities, with particular emphasis on matters related to areas of involvement of U.S. contractors and grantees.

Article XVI
Amendments

The Parties may amend this Agreement by written consent.

Article XVII
Governing Law

This Agreement shall be governed by international law.

Article XVIII
Disputes

18.1 The Parties shall consult with each other on any dispute arising out of the interpretation or implementation of this Agreement and its Protocols. The Parties shall use their best efforts to settle disputes promptly through consultation.

18.2 If any issue not settled through such consultations still needs to be resolved, the Parties may, if both agree, submit the issue to a mutually acceptable form of dispute resolution such as conciliation or mediation. If agreed by the Parties, this could include submission to an international arbitration tribunal, if appropriate.

Article XIX
Duration

19.1 This Agreement shall enter into force upon signature by the Parties. It shall remain in force for a period of twenty (20) years and thereafter be automatically renewed for a one year period on each anniversary date of the Agreement unless terminated pursuant to section 19.2 below.

19.2 Either Party may terminate this Agreement, its Protocols and any related document at any time, subject to one year's written notice of termination and to a consultation between the Parties with a view to reaching an equitable settlement for both Parties.

Done in Washington, on December 8, 1997, in duplicate copies, in the English and French languages, both versions being equally authentic.

FOR THE EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH (CERN):

Luciano Maiani
President of the CERN Council

FOR THE DEPARTMENT OF ENERGY OF THE UNITED STATES OF AMERICA:

Federico Peña
Secretary of Energy

FOR THE NATIONAL SCIENCE FOUNDATION OF THE UNITED STATES OF AMERICA:

Christopher H. Llewellyn Smith
Director-General of CERN

Neal Lane
Director, National Science Foundation

ANNEX I

THE LARGE HADRON COLLIDER

CERN - the European Laboratory for Particle Physics - is one of the world's leading scientific research laboratories. An early European joint venture, CERN was founded in 1954 by the Conseil Européen pour la Recherche Nucléaire (whence the acronym) and straddles the French-Swiss border west of the city of Geneva. CERN's nineteen member States - Austria, Belgium, the Czech Republic, Denmark, Hungary, Germany, France, Finland, Greece, Italy, the Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, the United Kingdom - provide the budget (937.6 million Swiss francs in 1996) in proportion to their national revenues.

CERN's business is pure research - studying Nature's tiniest building blocks, the fundamental particles, to find out how our world and the Universe work. The energy densities reached in head-on collisions of particles accelerated in CERN's machines approach those which may have prevailed immediately after the 'Big Bang', and are sufficient to create the elementary particles which populated the early universe. Detectors, built around the collision points, record the brief existence of these particles, re-enacting moments in the evolution of the early universe.

As early as 1977, during preparatory discussions for building the Large Electron Positron collider (LEP) at the European Laboratory for Particle Physics (CERN), it was clear that excavating the LEP tunnel would make more economic sense if it could be reused for a successor machine. Thus, while LEP was being designed and built in the early '80s, groups at CERN were busy looking at the longer term future. After many years of work on the technical aspects and physics requirements of such a machine, their dreams came to fruition in December 1994 when CERN's governing body, the CERN Council, voted to approve the construction of the Large Hadron Collider (LHC).

The LHC will be built from high powered superconducting magnets each 15 meters long. These magnets will hold counter-rotating beams of protons on a steady course around the ring as superconducting accelerating cavities "kick" them almost to the speed of light at energies up to the design energy specification of 7 TeV[1] per beam, and the design luminosity[2] specification of 10^{34} cm^{-2}- sec^{-1}, both higher than have ever before been reached in such accelerators. When these proton beams collide, at fixed crossing points, their combined energy of motion of 14 TeV will produce an intense micro-fireball which will shoot out hundreds of new particles. These flashes of energy will probe the interactions between the tiny quark constituents hidden deep inside the colliding protons and reveal how nature works at the most fundamental levels.

Since the mid-1980s the number of scientists from all over the world using CERN's facilities has increased enormously. Currently more than 6500 users, over half of the planet's experimental high-energy physicists, carry out fundamental research at CERN. This user community, coming from all parts of the world, is living proof that CERN welcomes inter-regional collaboration which benefits all and boosts the progress of science. The LHC, the only machine capable of addressing problems way beyond today's frontiers of high energy physics, offers a unique opportunity for extending world wide

---

1 A TeV, or tera electron volt, is a unit of energy used by particle physicists.

2 Luminosity is a measure of the collision rate in the colliding beams in units of cm^{-2}-sec^{-1}. At 7 TeV and at a luminosity of 10^{34}, the interaction rate will be the order of one billion (10^{9}) collisions per second.

collaboration. The door is open for non-Member States to become partners in the final design, construction, and exploitation of the LHC machine and its experiments. Such a 'globalization' of the LHC project would establish a precedent for future megascience projects, not only in particle physics but also in other fields. The foundation of CERN in the post-war years set a precedent in uniting the nations of Europe to carry out high quality research. The LHC now offers the exciting opportunity of establishing a model for future world-wide collaboration in 'Big Science'.